



# GLANDERS and MELIOIDOSIS

1. **Agent:** A non-motile gram negative bacilli, *Burkholderia mallei* (glanders) and *Burkholderia pseudomallei* (melioidosis)

including liver, spleen, prostate, and kidney, Mortality rate is 90%.

2. **Identification:**

- a. **Symptoms:**

**Pulmonary Infection**

Symptoms may present as acute febrile, necrotizing pneumonia with or without sepsis, with necrosis of tracheobronchial tree.

**Glanders** – often manifests itself as pulmonary infection; pneumonia, pulmonary abscesses, and pleural effusion can occur. Chest X-rays will show localized infection in the lobes of the lungs.

**Melioidosis** – often manifests as a mild bronchitis to severe pneumonia. The onset usually presents with high fever, headache, anorexia, and general muscle soreness. Chest pain is also common. A characteristic of pulmonary infection is a nonproductive or productive cough with normal sputum. Cavitory lesions may be seen on chest X-ray, similar to those in pulmonary tuberculosis.

**Localized-Cutaneous Infections**

**Glanders** – most often presents as a cut or scratch in the skin with localized infection and ulceration developing at the site where the bacteria entered the body. Swollen lymph nodes may also be apparent. Cutaneous infection can lead to systemic or septicemic infection if untreated.

**Melioidosis** – most often presents as an ulcer, nodule, skin abscess, pain and swelling at the site of introduction. Fever and muscle aches too. Infection may remain local or spread rapidly through the bloodstream.

**Septicemia**

Can occur with or without pneumonia and can affect multiple organ systems

**Chronic**

Can present with multiple abscesses or re-activation pneumonia.

**Glanders does not occur naturally in the United States (US), and ANY case of glanders is evidence for bioterrorism until proven otherwise.** If glanders were used as a weapon, it would be most effective as an aerosol and thus would present primarily in the pulmonic or systemic forms.

- b. **Differential Diagnosis:**

**Pulmonary glanders and melioidosis** –

include mycoplasma pneumonia, Legionnaire's disease, psittacosis, plague, tularemia, invasive group A streptococcal pneumonia, Q fever, histoplasmosis, coccidiomycosis, and anthrax.

**Cutaneous glanders and melioidosis** –

include insect bite, brown recluse spider bite, ulceroglandular tularemia, scrub typhus, rickettsial spotted fevers, ecthyma gangrenosum, plague, Orf, staphylococcal lymphadenopathy, cutaneous leishmaniasis, cat scratch fever.

- c. **Diagnosis:** Isolation of organism from blood, urine, sputum, skin lesions, or abscesses; or by detection of antibody response to the bacteria. Blood cultures are usually negative for *B. mallei* (glanders) but often positive for *B. pseudomallei* (melioidosis)

3. **Incubation:**

**Pulmonary Infection:**

Glanders: 10-14 days

Melioidosis: more difficult to determine, 1-21 days or could be extended months to years

**Localized-Cutaneous Infections:**

Glanders: 1-5 days

Melioidosis: difficult to determine

4. **Reservoir:**

Glanders: no natural occurring cases of glanders in the US since 1940's



Melioidosis: Soil and water in the tropics, endemic in Southeast Asia and northern Australia

5. **Source:**

Glanders: most common in horses, also donkeys, mules, goats, cats, and dogs

6. **Transmission:**

Glanders – contact with tissues or body fluids of infected animal through skin cuts or abrasions and through mucosal surfaces such as the eyes and nose. Inhalation via infected aerosols or dust contaminated by infected animals. Sporadic cases have been documented in veterinarians, horse caretakers, and laboratorians.

Melioidosis - inhalation of dust, ingestion of contaminated water, and contact with contaminated soil especially through skin abrasions.

7. **Communicability:** No person-to-person transmission; possible transmission by cutaneous contact with skin lesions.

Both are highly infectious organisms and have caused laboratory-acquired infections. If *B. mallei* or *B. pseudomallei* are suspected, it requires precautions by microbiologists and is usually referred to a BSL-3 lab.

8. **Specific treatment:** Human cases of glanders are rare. Treatment varies depending on type and severity of clinical presentation: trimethoprim-sulfamethoxazole (TMP-SMX), doxycycline, amoxicillin/clavulanate. For severe disease: ceftazidime or imipenem or meropenem

## REPORTING PROCEDURES

1. **Report any case or suspect cases by telephone immediately** (Title 17, Section 2500. *California Code of Regulations*).

2. **Report Form:**  
[OTHER REPORTABLE DISEASE or DISEASE OF UNUSUAL OCCURANCE \(CDPH 8554\)](#)

[MELIOIDOSIS INTAKE FORM](#) (For ACDC Internal Use)

## CONTROL OF CASE, CONTACTS & CARRIERS

### CASE:

1. Provide necessary antibiotic treatment as soon as disease is confirmed. Standard precautions indicated.
2. **For Laboratory Exposure:** see Management of Laboratory Exposed to *B. mallei* and *B. pseudomallei*
3. **ANIMAL:** Los Angeles County Department of Public Health (LAC DPH)'s Veterinary Public Health Program will investigate potential animal sources.

### CONTACTS:

Avoid contact with bloody or body fluids of an infected person.

### Management of Laboratory Exposure to *B. mallei* and *B. pseudomallei*:

Laboratory workers that have worked with cultures of the organism are at risk of developing disease. Laboratories that have handled the specimen should conduct an exposure risk assessment on their lab employee.

If there are any potential laboratory exposures (high or low), the worker should be evaluated by the lab facility's occupational health physician as part of the laboratory health and safety plan.

CDC recommends symptom watch for 21 days as well as baseline and follow-up serology on employees with lab exposure (regardless of high or low risk).

The following Emerging Infectious Disease article by Peacock et al., can be used as guidance on the Management of Accidental Laboratory Exposure to *Burkholderia pseudomallei* and *B. mallei*:  
[http://wwwnc.cdc.gov/eid/article/14/7/07-1501\\_article.htm](http://wwwnc.cdc.gov/eid/article/14/7/07-1501_article.htm)

## PREVENTION-EDUCATION

Glanders:

1. No vaccine available



2. Identification and elimination of infection in the animal population in countries where glanders is endemic in animals.
3. Use of Standard Contact Precaution in Health Care Settings.

Laboratory personnel handling specimens from persons who might have glanders must wear appropriate Personal Protection Equipment.

Melioidosis:

1. Currently, no vaccine available
2. Decrease risk of exposure in areas where the disease is endemic (Southeast Asia and northern Australia):
  - a. Avoid contact with contaminated soil or water, especially persons with open wounds, cuts, or scrapes and persons with immunocompromised conditions
  - b. Agricultural workers should wear boots to prevent infection through feet or lower leg
  - c. Health care workers should use standard contact precaution

## DIAGNOSTIC PROCEDURES

If glanders or melioidosis is suspected, contact the LAC DPH Public Health Laboratory for consultation at:  
213-250-8619 or 213-974-1234